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26 July 1961



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I am enclosing three copies of an optical stretch-out of a proposed 8" F/2.0, 1:1 relay lens in accordance with our discussion with [redacted]. This lens is a straight forward development of our 2:1 reduction lens, modified for 70 millimeter format.

I have traced this system at F/2.0 and F/3.0 and find that at each of these relative apertures, diffraction limited imagery is obtained. The aerial image resolution of the aforementioned relative apertures are 349 l/mm and 232 l/mm respectively. STATINTL

Since our investigations of the reliability of [redacted] empirical expression for lens-film resolution seems reliable for short conjugate systems, the predicted resolution on SO 243 are as follows:

At F/2.0

Low contrast: 145.8 l/mm

High contrast: 220.8 l/mm

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It should be noted that SO 243, which is somewhat better than Microfile, has a resolution capability of 500-600 l/mm under high contrast conditions. You will remember that [redacted] indicated the availability of Panochromatic film which will resolve a thousand lines or better. If we could obtain more information about this emulsion, and find that a thousand l/mm can be obtained, then the 1:1 lens we are proposing would conceivably resolve 340 l/mm.

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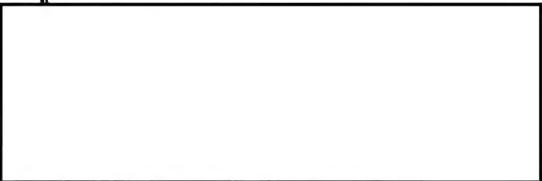
I think [redacted] desires are in this neighborhood, namely

Declass Review by NIMA/DOD

300-400 lines. Please note that resolution expression of this magnitude is limited by the state of the art and is then near a maximum value.

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Very truly yours,



Optical Design Engineer

RJH/bb  
Enclosures 3

July 24, 1961

Central Intelligence Agency

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[redacted]  
Washington 25, D. C.

Subject: Contract [redacted]

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Attention: [redacted]

Gentlemen:

During our discussion on July 20, 1961 with your technical personnel concerning the above subject contract, it became apparent that the requirement for the 2:1 Reduction Lens on contract has been projected forward to a future planning period. A somewhat more immediate requirement was discussed and we indicated that our existing design could be readily modified to satisfy the needs of a 1:1 70 mm Reproduction Lens and other applications.

Your people indicated that prior to any further action with regard to the 1:1 Lens, it would be desirable to modify the scope of the contract to eliminate the hardware and re-define the scope to include the following engineering data:

- (a) Detail Drawings of the optical design.
- (b) Complete tolerance analysis.
- (c) Outline drawing of suggested mounting. N.C.
- (d) Results of a company sponsored film study. N.C.
- (e) Suggested applications of the existing optical design. N.C.

The costs expended to accomplish the above would be combined with our actual costs to date, and together would provide the basis for the final contract price.

The following is our total estimated costs:

Central Intelligence Agency  
Washington 25, D. C.

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We estimate a total of eight (8) weeks after authorization are necessary to finalize the remaining phases of our contract in accordance with the revised scope and to deliver our final engineering report.

We would be very pleased to receive your comments with regard to our latest plan and we would like to again express our desire to supply you with any additional data you may need.

Very truly yours,

STATINTL

Y

JWS:mll

Contracts Manager